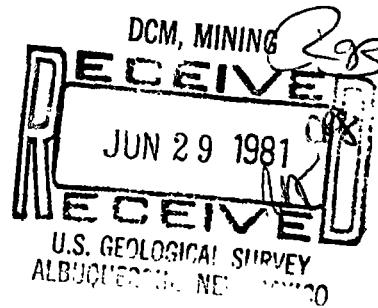


ANACONDA Copper Company

New Mexico Operations
P.O. Box 638
Grants, New Mexico 87020
505/876-2211



June 19, 1981



Mr. Ed Sandell
Deputy Conservation Manager
United States Department of Interior
Geological Survey
P.O. Box 26124
Albuquerque, New Mexico 87125

Dear Sir:

The following information is being submitted in accordance with the Jackpile-Paguate Minesite Reclamation Sampling Program for the period between January 1980 and June 1981.

1. Surface gamma survey from reclaimed sites
2. Radiological analysis of reclaimed site soils and vegetation
3. Chemical analysis of reclaimed site soils and vegetation
4. Radon exhalation values from reclaimed sites
5. Map showing radon exhalation sampling stations

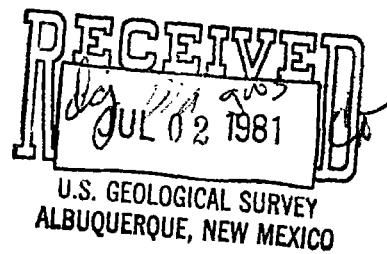
Sincerely,

Meade A. Stirland
Meade A. Stirland, Manager

ENVIRONMENT, HEALTH & SAFETY

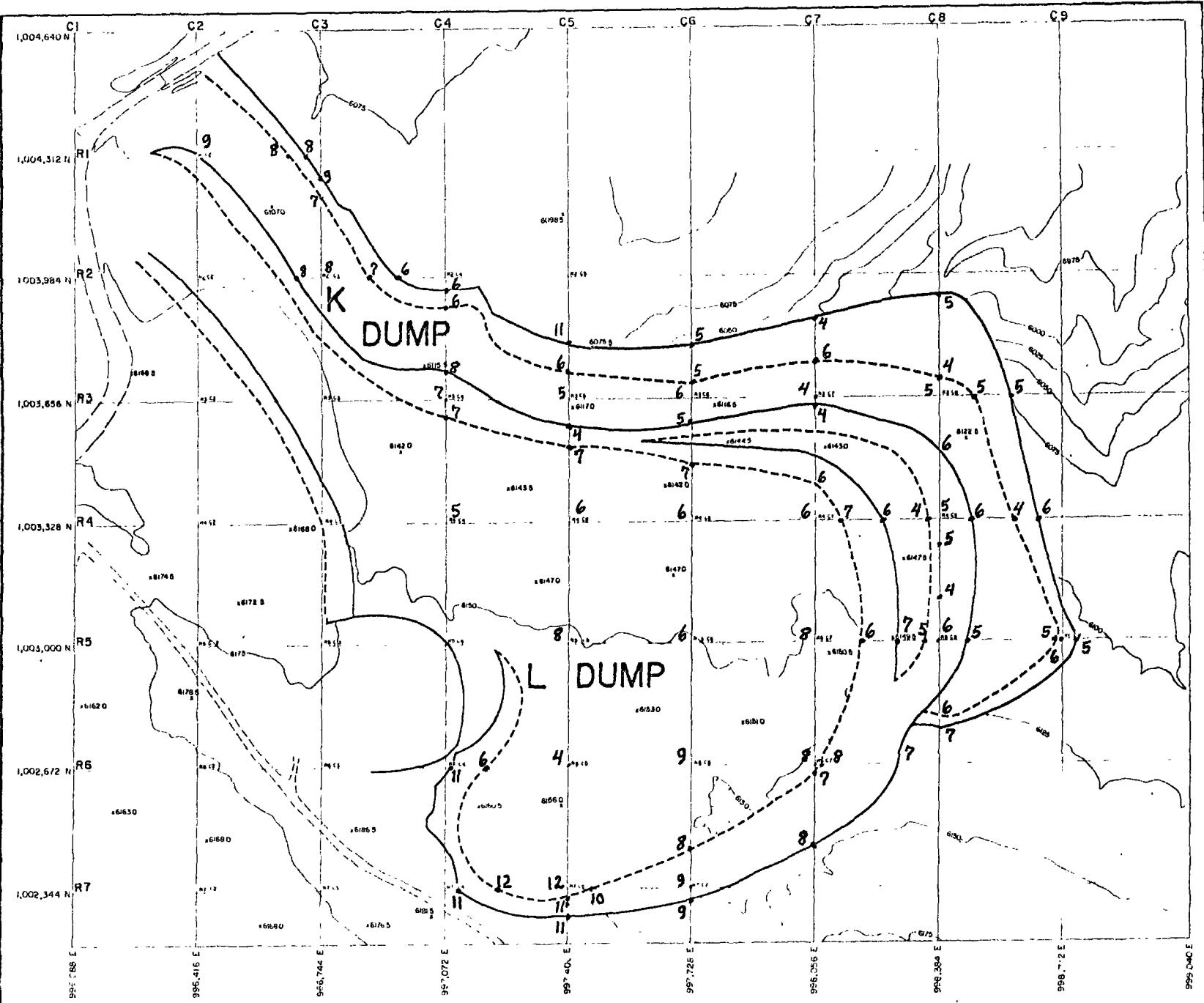
jls

Enclosure



Gamma Radiological Survey

**Readings in μ per hr.
100 Meter Grid**



CONFIDENTIAL

POL-EPA01-0004970

STATISTICAL ANALYSIS

DUMPS K & L

All surveyed points from the gamma survey map are used for statistical analysis. A population is considered uniform provided the standard deviation is less than thirty-five (35) percent of that population. A uniform gamma survey dictates, according to our Minesite reclamation Sampling Plan, that the area can be sampled for soil and vegetation on 10M² station per 90,000 M² area. However, should an area be smaller than 90,000 M², it will receive the same sampling density.

Readings in uR/hr

11 + 11 + 9 + 9 + 11 + 12 + 12 + 10 + 8 + 5
7 + 8 + 11 + 6 + 4 + 9 + 8 + 8 + 7 + 6 +
7 + 8 + 6 + 8 + 6 + 7 + 5 + 5 + 4 + 6 +
5 + 5 + 6 + 5 + 7 + 5 + 4 + 7 + 6 + 5 +
7 + 6 + 4 + 6 + 7 + 6 + 6 + 4 + 6 + 6 +
4 + 6 + 6 + 6 + 8 + 7 + 11 + 6 + 5 + 5 +
5 + 6 + 4 + 6 + 4 + 5 + 4 + 5 + 5 + 5 +
8 + 9 + 7 + 8 + 7 + 6 + 9 + 8 + 8

$$\bar{x} = \frac{\sum x_i}{N} = \frac{530}{79} = 6.71$$

$$\sigma = \sqrt{\frac{\sum (x_i - \bar{x})^2}{N-1}} = 2.0$$

$$\text{Uniformity} = \frac{\sigma}{\bar{x}} = \frac{2.0}{6.76} = .2981 = 29.81\%$$

GAMMA SURVEY

Routine 100 meter measurements in uR/hr.

Location: Dumps L and K

Date: Oct 1980

THE ANACONDA COPPER COMPANY
RECLAIMED SITE SOIL
ANALYSIS

RADIOLOGICAL

Sample	DATE TAKEN	THORIUM-230 pCi/gm	RADIUM-226 pCi/gm	LEAD-210 pCi/gm	URANIUM ug/gm
Dump F (C4)	09-24-80	2.86	1.66	3.1	2.41
Dump F (C3)	09-24-80	2.17	2.17	3.4	5.65
Dump G (C4)	09-24-80	3.55	0.94	3.0	5.82

THE ANACONDA COPPER COMPANY
RECLAIMED SITE SOIL
ANALYSIS

CHEMICAL

SAMPLE SITE	DATE TAKEN	As ppm	Se ppm	Mo ppm	Pb ppm	V ppm	Cd ppm	Zn ppm
Dump C (R 9)	01-21-80	<0.10	<0.40	<0.5	<0.5	<0.5	<0.1	0.60
Dump D (R 8)	01-17-80	<0.10	<0.40	<0.5	<0.5	<0.5	<0.1	<0.30
Dump E (R 8)	01-17-80	<0.10	<0.40	<0.5	<0.5	<0.5	<0.1	0.70
Dump F (C 4)	09-24-80	<0.10	<0.05	<0.1	<0.5	0.6	<0.1	<0.50
Dump F (C 3)	09-24-80	0.20	<0.05	<0.1	<0.5	<0.5	<0.1	<0.50
Dump G (C 4)	09-24-80	<0.10	<0.05	0.2	<0.5	<0.5	<0.1	0.70

THE ANACONDA COPPER COMPANY
RECLAIMED SITE VEGETATION
ANALYSIS

RADIOLOGICAL - Dumps C,D,E,G

SAMPLE	DATE TAKEN	THORIUM-230 pCi/gm	RADIUM-226 pCi/gm	LEAD-210 pCi/gm	URANIUM ug/gm
Dump C (R 9)	09-24-80	1.17	1.15	3.2	7.13
Dump D (R 8)	09-24-80	0.56	0.39	2.0	4.71
Dump E (R 8)	09-24-80	2.56	1.14	3.2	5.37
Dump G (C 4)	09-24-80	0.84	1.02	3.2	2.89

THE ANACONDA COPPER COMPANY
RECLAIMED SITE VEGETATION
ANALYSIS

RADIOLOGICAL - DUMP F - This Dump was selected for individual species analysis.

SAMPLE	DATE TAKEN	THORIUM-230 pCi/gm	RADIUM-226 pCi/gm	LEAD-210 pCi/gm	URANIUM ugm/gm
Stickleaf	09-24-80	2.52	1.26	4.7	4.52
Fourwing saltbush	09-24-80	0.72	0.30	1.4	2.70
Red Three Awn	09-24-80	0.50	0.56	3.4	9.79
Alkali Sacaton	09-24-80	1.84	1.32	5.0	4.82
Annual Forbs	09-24-80	0.85	0.79	2.0	2.98
Blue Grama	09-24-80	1.75	1.70	3.5	3.41
Weeping Lovegrass	09-24-80	0.28	0.58	4.0	10.21
Crested Wheatgrass	09-24-80	1.73	0.94	3.7	4.03

THE ANACONDA COPPER COMPANY
RECLAIMED SITE VEGETATION
ANALYSIS

CHEMICAL - Dump C,D,E,G

SAMPLE SITE	DATE TAKEN	As ppm	Se ppm	Mo ppm	Pb ppm	V ppm	Cd ppm	Zn ppm
Dump C (R 9)	9-24-80	0.3	0.07	0.7	<0.5	0.9	<0.1	32.0
Dump D (R 8)	9-24-80	0.6	<0.05	1.1	<0.5	0.7	<0.1	36.0
Dump E (R 8)	9-24-80	0.7	3.00	0.7	<0.5	0.8	<0.1	57.0
Dump G (C 4)	9-24-80	0.4	0.49	<0.1	<0.5	<0.5	<0.1	43.0

THE ANACONDA COPPER COMPANY
RECLAIMED SITE VEGETATION
ANALYSIS

CHEMICAL - F DUMP - This Dump was selected for individual species analysis.

SAMPLE SITE	DATE TAKEN	As ppm	Cd ppm	Mo ppm	Pb ppm	Se ppm	V ppm	Zn ppm
Stickleleaf	09-24-80	0.7	<0.1	0.4	<0.5	0.07	<0.5	110
Fourwing Saltbush	09-24-80	0.4	<0.1	<0.1	<0.5	0.17	<0.5	19
Red Three Awn	09-24-80	0.7	<0.1	0.2	<0.5	0.07	<0.5	40
Alkali Sacaton	09-24-80	0.4	<0.1	0.1	<0.5	0.12	<0.5	19
Annual Forb	09-24-80	0.4	<0.1	0.2	<0.5	0.05	<0.5	16
Blue Grama	09-24-80	0.4	<0.1	0.1	<0.5	0.09	1.1	26
Weeping Lovegrass	09-24-80	<0.3	<0.1	<0.1	<0.5	0.39	0.8	44
Crested Wheatgrass	09-24-80	0.8	<0.1	<0.1	<0.5	0.16	1.1	40

THE ANACONDA COPPER COMPANY
RADON EXHALATION ANALYSIS

SITE	DATE	RADON EXHALATION fc ¹ /cm ² - sec
Dump D	09-25-80	0.060
Dump E	09-30-80	0.468
Dump F	10-01-80	0.131
Dump F	06-11-81	0.110
Dump G	09-02-80	1.646
Dump G	06-08-81	0.415
Dump L	06-09-81	0.257
Dump K	06-10-81	0.270